Name: Date:
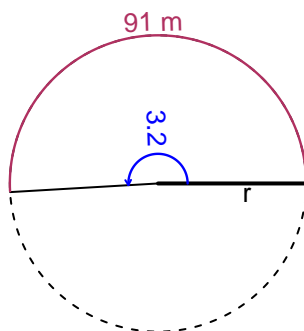
Trig Final (TEST v675)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 3.2 radians. The arc length is 91 meters. How long is the radius in meters?
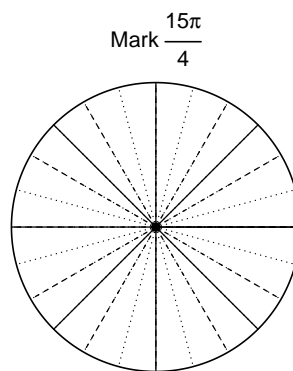

Question 2

Consider angles $\frac{-8\pi}{3}$ and $\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-8\pi}{3}\right)$ and $\cos\left(\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-8\pi}{3}$ Mark $\dfrac{15\pi}{4}$
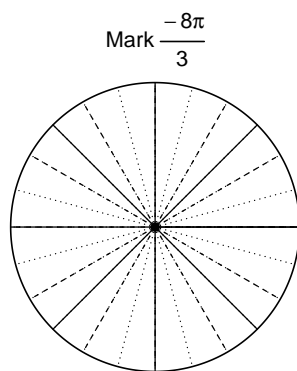
Find $\sin(-8\pi/3)$ Find $\cos(15\pi/4)$

Question 3

If $\cos(\theta) = \frac{65}{97}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 5.36$ meters, an amplitude of 4 meters, and a frequency of 7.16 Hz. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).